Remarks

Support the above-requested amendments to claim 27 is found at least on page 4, lines 3-10. Claim 53 has been amended to correct an inadvertent grammatical error. Claims 40 and 49 have been canceled without prejudice. Claims 1-26, 34, and 50-52 were canceled in previous Amendments. New claims 61 and 62 are supported at least by page 2, lines 1-5. No question of new matter arises and entry of the amendments and new claims is respectfully requested.

Claims 27-33, 35-39, 41-48, and 53-62 are before the Examiner for consideration.

Rejection under 35 U.S.C. §112, second paragraph

Claims 38, 39, 49, and 53-60 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite. In particular, the Examiner asserts that in claims 38 and 39, there is no antecedent basis for the term "non-fleece". Additionally, the Examiner asserts that claim 49 is already a composite because claim 27, from which claim 49 depends, contains more than one layer. The Examiner states that claim 53 is indefinite because the claims ends with "and".

In response, Applicants have amended claims 38 and 39 to recite that the first and second reinforcing fabric layers are bound together by stitching or needle punching, respectively. Additionally, Applicants have canceled claim 49 without prejudice, thereby rendering the rejection of this claim moot. Claim 53 has been amended to remove the word "and" at the end of the sentence. In view of the above, Applicants respectfully submit that claims 38, 39, 49, and 53-60 are sufficiently definite and respectfully request that the Examiner reconsider and withdraw this rejection.

Rejection under 35 U.S.C. §102(b)

Claims 27, 30, 40, 41, 47, 48, and 49 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 3,044,256 to Thomas, *et al.* ("Thomas") or U.S. Patent No. 4,041,203 to Brock, *et al.* ("Brock"). The Examiner asserts that both Thomas and Brock disclose a central core of randomly distributed glass strands which overlap in loops and a layer of glass fabric attached to both sides thereof where the layers are linked together by stitching and/or bonding. The Examiner admits that Brock does not specifically disclose that the central layer is formed of overlapping loops. However, the Examiner states that Brock

refers to U.S. Patent No. 3,692,618 to Dorschner, *et al.* ("Dorschner"), which assertedly teaches how to form the claimed central layer.

Applicants' Response

Initially, Applicants submit that claims 40 and 49 have been canceled without prejudice, thereby rendering the rejection of these claims moot.

Looking first at Brock, Applicants submit that Brock does not teach (or suggest) a fibrous reinforcing structure as claimed in claim 27. In particular, Applicants submit that Brock does not teach (or suggest) a fibrous reinforcing structure that contains at least one central layer and fabric layers positioned on either side thereof where the layers of the structure are linked together by a mechanical mechanism or a chemical mechanism. Brock clearly teaches heat bonding the thermoplastic fibers at various nip points by a partial melting of the thermoplastic fibers. For example, Brock teaches that that the attachment between the mat and the web is affected by putting the laminate into contact with a heated surface roll and then through a pressure nip that is formed between the heated surface roll and a second heated roll that contains raised points. (*See, e.g.*, column 4, lines 9-21). The heated roll permits the fibers to soften to an extent that, upon compression in the nip, the fibers in the mat regions in register with the raised portions tend to flow around the continuous filaments, thereby bonding the mat at these predetermined locations. (*See, e.g.*, column 5, lines 3-10).

Applicants respectfully submit that the selective heat bonding at the nip points by melting the thermoplastic fibers is not a mechanical or chemical mechanism. As taught in the MPEP, during patent prosecution, the claims are to be given their broadest interpretation and are to be read in light of the specification.[1] Applicants respectfully submit that the specification specifically teaches that mechanical mechanisms include mechanisms such as needle punching and/or stitching and the chemical mechanism include binders. (*See, e.g.*, page 2, lines 1-5 of the specification). Upon review of the specification, it is clear that the heat bonding of Brock is neither a mechanical nor a chemical mechanism as disclosed and defined by the specification.

In addition, Applicants respectfully submit that Brock does not teach (or suggest) fixing loops of continuous strands forming a central layer by applying a binder, where the binder is independent of the chemical and/or mechanical mechanism as claimed in claim 27.

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[1] *See, e.g.*, *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 7, August 2008, §§ 2111 and 2173.

Applicants submit that Brock is silent regarding any teaching (or suggestion) of the application of a binder to the central layer to fix the orientation of loops of continuous strands. Indeed, the only bonding Brock teaches is heat bonding the various layers by melting portions of the thermoplastic fibers, as discussed above. There is absolutely no teaching (or suggestion) whatsoever within Brock of the use of a binder for any purpose.

Furthermore, Applicants submit that Brock does not teach (or suggest) a central layer of continuous strands that form loops partially superposed one on top of another as required by claim 27. In the outstanding Office Action, the Examiner asserts that Brock refers to Dorschner for teaching the formation of the claimed loops. (*See* page 3, lines 16-21 of the Office Action dated December 2, 2009). Applicants respectfully submit that Dorschner does not teach (or suggest) the formation of loops partially superposed one on top of another. Indeed, Dorschner teaches projecting bundles or sub-bundles of fibrous strands against a carrier at high speeds, which cause the bundles to break up and the sub-bundles to bounce up and form a turbulent layer of intermingled bundles and sub-bundles that are then laid down onto the carrier. (*See, e.g.*, column 5, lines 67-74). Dorschner further teaches that stratification is avoided by providing for the simultaneous formation, intermingling, and overlapping of filament, sub-bundles, loops, and swirls in adjacent lay-down sections. (*See, e.g.*, column 7, lines 29-32). Applicants respectfully submit that the layers of Dorschner are simply not the same as continuous strands formed loops partially superposed one on top of another as required by claim 27.

As is well established, in order for a reference to be anticipatory, each and every element of the claimed invention must be found within the four corners of the cited reference. Applicants respectfully submit that because Brock does not teach linking the layers of the fibrous structure together by a mechanical mechanism or a chemical mechanism, utilizing a binder to fix the geometry of the loops of continuous strands where the binder is independent of the chemical and/or mechanical mechanism, or a central layer of continuous strands in the form of loops partially superposed on each other as required by claim 27, Brock cannot be an anticipatory reference. Accordingly, Applicants submit that independent claim 27 is not anticipated by Brock.

Turning to Thomas, Applicants respectfully submit that Thomas does not teach (or suggest) a fibrous reinforcing structure as claimed in claim 27. In particular, Applicants submit that Thomas does not teach (or suggest) a fibrous structure that contains at least one central layer of randomly distributed continuous strands that form loops partially superposed

one on top of another where the loops are bound by a binder to fix the geometry thereof where the binder is independent of the mechanical mechanism and/or chemical mechanism. Indeed, Thomas is silent regarding the use of a binder for any purpose, especially a binder used to fix the orientation of loops of continuous strands forming a central layer of a fibrous structure. Applicants submit that there is absolutely no teaching (or suggestion) whatsoever within Thomas of the use of a binder for any purpose.

In addition, Applicants respectfully submit that Thomas does not teach (or suggest) a central layer formed of loops partially superposed one on top of another as required by claim 27. Thomas teaches the application of a curled strand to a surface of a web by an oscillating plate such that the cross-runs of the circling strand overlap to an extent that will result in the desired thickness. (*See, e.g.*, column 3, lines 25-32). This layer is then pressed down by a roller and an upper web is positioned over the curled strand layer. (*See, e.g.*, column 3, lines 47-49). It is respectfully submitted that the overlapping cross-runs of a curled, continuous strand of Thomas is simply not the same as the claimed fibrous structure where the central layer is formed of loops partially superposed one on top of another from a plurality of strands.

As discussed above, to be an anticipatory reference, each and every element of the claimed invention must be found within the four corners of the cited reference. Applicants respectfully submit that because Thomas does not teach (1) utilizing a binder to fix the geometry of the loops of continuous strands in a central layer where the binder is independent of the chemical and/or mechanical mechanism or (2) a central layer of continuous strands in the form of loops partially superposed on each other as required by claim 27, Thomas cannot be an anticipatory reference. Accordingly, Applicants submit that independent claim 27 is not anticipated by Thomas.

With respect to dependent claims 30, 40, 41, 47, 48, and 49, Applicants submit that because independent claim 27 is not taught (or suggested) by Brock or Thomas and claims 30, 40, 41, 47, 48, and 49 are dependent upon claim 27 and contain the same elements as claim 27, dependent claims 30, 40, 41, 47, 48, and 49 are also not taught (or suggested) by Brock and/or Thomas.

In light of the above, Applicants submit that claims 27, 30, 40, 41, 47, 48, and 49 are not anticipated by Brock or Thomas and respectfully request that this rejection be reconsidered and withdrawn.

Rejection under 35 U.S.C. §103(a)

Claims 28, 29, 31-33, and 35-39 have been rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 3,044,256 to Thomas, *et al.* ("Thomas") or U.S. Patent No. 4,041,203 to Brock, *et al.* ("Brock"). The Examiner admits that Brock and Thomas fail to disclose the specific mass per unit area. The Examiner concludes, however, that it would have been obvious to one of skill in the art to make the layer(s) of Brock and Thomas any mass per unit area that is required for a particular application. The Examiner also asserts that one of skill in the art would use whatever length is needed for the particular application and would apply an additional layer in order to form a composite.

Applicants' Response

In response to this rejection, Applicants respectfully direct the Examiner's attention to independent claim 27 and submit that claim 27 defines a fibrous structure that is not taught or suggested by Brock or Thomas.

Looking first at Brock, Applicants submit that Brock does not teach or suggest a fibrous reinforcing structure that contains at least one central layer and fabric layers positioned on either side thereof where the layers of the structure are linked together by a mechanical mechanism or a chemical mechanism. It is respectfully submitted that Brock specifically teaches heat bonding the thermoplastic fibers at various nip points by a partial melting of the thermoplastic fibers. In particular, Brock teaches that that the attachment between the mat and the web is affected by putting the laminate into contact with a heated surface roll and then through a pressure nip that is formed between the heated surface roll and a second heated roll that contains raised points. (*See, e.g.*, column 4, lines 9-21). The heated roll permits the fibers to soften to an extent that, upon compression in the nip, the fibers in the mat regions in register with the raised portions tend to flow around the continuous filaments. (*See, e.g.*, column 5, lines 3-10).

Applicants respectfully submit that the selective heat bonding at the nip points by melting the thermoplastic fibers is not a mechanical or chemical mechanism. As taught in the MPEP, during patent prosecution, the claims are to be given their broadest interpretation and are to be read in light of the specification.[2] Applicants respectfully submit that the

[2] *See, e.g.*, *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 7, August 2008, §§ 2111 and 2173.

specification specifically teaches that mechanical mechanisms include mechanisms such as needle punching and/or stitching and the chemical mechanism include binders. (*See, e.g.*, page 2, lines 1-5 of the specification). Upon review of the specification, it is clear that the heat bonding of Brock is neither a mechanical nor a chemical mechanism as disclosed and defined by the specification. Indeed, Brock neither teaches nor suggests linking the various layers by a chemical or mechanical mechanism as required by claim 27. As such, it is respectfully submitted that claim 27 is non-obvious and patentable for at least this reason.

In addition, Applicants respectfully submit that Brock does not teach or suggest the use of a binder to fix the geometry of loops of continuous strands forming the central layer, where the binder is independent of the chemical and/or mechanical mechanism as claimed in claim 27. Applicants submit that Brock is silent regarding any teaching or suggestion of applying a binder to the central layer to fix the orientation of loops of continuous strands. Indeed, Brock specifically teaches heat bonding the layers by melting portions of the thermoplastic fibers, as discussed in detail above. It is respectfully submitted that there is absolutely no teaching or suggestion whatsoever within Brock of the use of a binder for any purpose. Thus, Applicants submit that claim 27 is non-obvious and patentable over Brock for this additional reason.

Further, Applicants submit that Brock does not teach or suggest a central layer of continuous strands that form loops partially superposed one on top of another as required by claim 27. In the outstanding Office Action, the Examiner asserts that Brock refers to Dorschner for teaching the formation of the claimed loops. (*See* page 3, lines 16-21 of the Office Action dated December 2, 2009). Applicants respectfully submit that Dorschner does not teach or suggest the formation of loops partially superposed one on top of another. Indeed, Dorschner teaches projecting bundles or sub-bundles of fibrous strands against a carrier at high speeds, which cause the bundles to break up and the sub-bundles to bounce up and form a turbulent layer of intermingled bundles and sub-bundles that are then laid down onto the carrier. (*See, e.g.*, column 5, lines 67-74). Dorschner further teaches that stratification is avoided by providing for the simultaneous formation, intermingling, and overlapping of filament, sub-bundles, loops, and swirls in adjacent lay-down sections. (*See, e.g.*, column 7, lines 29-32). Applicants submit that these layers of Dorschner are simply not the same as continuous strands forming loops partially superposed one on top of another as required by claim 27. Accordingly, Applicants submit that claim 27 is patentable for this additional reason.

In addition, it is respectfully submitted that one of ordinary skill in the art would have no motivation to arrive at a fibrous reinforcing structure that includes (1) at least one central layer of randomly distributed continuous strands, where the continuous strands form loops partially superposed one on top of another, (2) at least one first reinforcing fabric layer disposed exterior to the central layer of randomly distributed continuous strands, and (3) a second reinforcing fabric layer located on another side of the continuous strand layer from the first reinforcing fabric layer, where the layers of the structure are linked together by a mechanical mechanism or a chemical mechanism, where the loops of continuous strands are bound by a binder to fix the geometry of the loops, and where the binder is independent of the mechanical mechanism and/or chemical mechanism based on the teachings of Brock at least because Brock does not teach or suggest linking the layers of the fibrous structure together by a mechanical mechanism or a chemical mechanism, utilizing a binder to fix the geometry of the loops of continuous strands where the binder is independent of the chemical and/or mechanical mechanism, or a central layer of continuous strands in the form of loops partially superposed on each other as required by claim 27. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.[3]

Additionally, Applicants submit that because Brock does not teach or suggest linking the layers of the fibrous structure together by a mechanical mechanism or a chemical mechanism, utilizing a binder to fix the geometry of the loops of continuous strands where the binder is independent of the chemical and/or mechanical mechanism, or the claimed central layer of continuous strands where the continuous strands form loops partially superposed one on top of another, Brock fails to teach all of the claim limitations set forth in claim 27. Therefore, it is submitted that a *prima facie* case of obviousness has not been established for this additional reason.

Turning to Thomas, Applicants respectfully submit that Thomas does not teach or suggest a fibrous reinforcing structure as claimed in claim 27. In particular, Applicants submit that Thomas does not teach or suggest a fibrous structure that contains at least one

[3] In order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and the prior art reference (or references when combined) must teach or suggest all the claim limitations. (*See, e.g.*, *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 7, August 2008, §2143 citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007)).

central layer of randomly distributed continuous strands that form loops partially superposed one on top of another where the loops are bound by a binder to fix the geometry thereof and the binder is independent of the mechanical mechanism and/or chemical mechanism. Indeed, Thomas is silent regarding the use of a binder for any purpose, particularly a binder used to fix the orientation of loops of continuous strands forming a central layer of a fibrous structure. There is absolutely no teaching or suggestion whatsoever within Thomas of the use of a binder for any purpose. Accordingly, Applicants submit that claim 27 is non-obvious and patentable over Thomas for at least this reason.

In addition, Applicants respectfully submit that Thomas does not teach or suggest a central layer formed of loops partially superposed one on top of another as required by claim 27. Thomas teaches the application of a curled strand to a surface of a web via an oscillating plate such that the cross-runs of the circling strand overlap to an extent that will result in the desired thickness. (*See, e.g.*, column 3, lines 25-32). This layer is then pressed down by a roller and an upper web is positioned over the curled strand layer. (*See, e.g.*, column 3, lines 47-49). It is respectfully submitted that the overlapping cross-runs of a curled, continuous strand of Thomas is simply not the same as the claimed fibrous structure where the central layer is formed of loops partially superposed one on top of another from a plurality of strands. Additionally, Applicants submit that there is no teaching or suggestion whatsoever within Thomas of central layer of randomly distributed continuous strands that form a central layer of loops partially superposed one on top of another as claimed in claim 27. Thus, Applicants submit that claim 27 is non-obvious and patentable over Thomas for this additional reason.

In addition, it is respectfully submitted that one of ordinary skill in the art would have no motivation to arrive at a fibrous reinforcing structure that includes (1) at least one central layer of randomly distributed continuous strands, where the continuous strands form loops partially superposed one on top of another, (2) at least one first reinforcing fabric layer disposed exterior to the central layer of randomly distributed continuous strands, and (3) a second reinforcing fabric layer located on another side of the continuous strand layer from the first reinforcing fabric layer, where the layers of the structure are linked together by a mechanical mechanism or a chemical mechanism, where the loops of continuous strands are bound by a binder to fix the geometry of the loops, and where the binder is independent of the mechanical mechanism and/or chemical mechanism based on the teachings of Thomas at least because Thomas does not teach or suggest (1) utilizing a binder to fix the geometry of

the loops of continuous strands where the binder is independent of the chemical and/or mechanical mechanism or (2) a central layer of continuous strands in the form of loops partially superposed on each other as required by claim 27. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.[4]

Additionally, Applicants submit that because Thomas does not teach or suggest utilizing a binder to fix the geometry of the loops of continuous strands where the binder is independent of the chemical and/or mechanical mechanism or a central layer of continuous strands in the form of loops partially superposed on each other, Thomas fails to teach all of the claim limitations set forth in claim 27. Therefore, it is submitted that a *prima facie* case of obviousness has not been established for this additional reason.

In view of the above, it is respectfully submitted that independent claim 27 is not taught or suggested by Brock or Thomas and that claim 27 is therefore non-obvious and patentable. With respect to dependent claims 28, 29, 31-33, and 35-39, Applicants submit that because independent claim 27 is not taught or suggested by Brock or Thomas and claims 28, 29, 31-33, and 35-39 are dependent upon claim 27 and contain the same elements as claim 27, dependent claims 28, 29, 31-33, and 35-39 are also not taught or suggested by Brock or Thomas.

In light of the above, Applicants submit that claims 28, 29, 31-33, and 35-39 are not obvious over Brock or Thomas and respectfully request reconsideration and withdrawal of this rejection.

Rejection under 35 U.S.C. §103(a)

Claims 42-46 have been rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 3,044,256 to Thomas, *et al.* ("Thomas") or U.S. Patent No. 4,041,203 to Brock, *et al.* ("Brock") as applied to claims 27, 30, 40, 41, and 47-49 above, and further in view of U.S. Patent No. 3,197,860 to Gracer ("Gracer") or U.S. Patent No. 4,298,647 to Cancio, *et al.* ("Cancio"). The Examiner admits that Thomas and Brock fail to teach the inclusion of notches to aid in bending the composite.

[4] In order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and the prior art reference (or references when combined) must teach or suggest all the claim limitations. (*See, e.g.*, *Manual of Patent Examining Procedure*, Patent Publishing,

In this regard, the Examiner asserts that both Gracer and Cancio disclose that it is known in the art to form notches in a material in order to aid in bending the material. The Examiner concludes that it would have been obvious to one of skill in the art to include notches in the materials of Thomas and Brock to aid in bending.

Applicants' Response

In response to this rejection, Applicants respectfully direct the Examiner's attention to independent claim 27 and submit that claim 27 defines a fibrous reinforcing structure that is neither taught nor suggested by Brock, Thomas, Gracer, or Cancio. In addition, Applicants submit that Brock, Thomas, Gracer, and Cancio fail to teach the combination of features recited in claim 27.

Applicants respectfully direct the Examiner's attention to independent claim 27 and to the arguments set forth above with respect to the rejection of claims 28, 29, 31-33, and 35-39 under 35 U.S.C. §103(a) to Brock or Thomas and submit that claim 27 defines a fibrous structure that is not taught or suggested within Brock or Thomas. In addition, Applicants respectfully submit that the teachings of Gracer and/or Cancio do not add to the Examiner's rejection so as to make claim 27 unpatentable. It is respectfully submitted that Gracer and/or Cancio do not make up for the deficiencies of Brock and Thomas, and, as a result, Brock, Thomas, Gracer, and Cancio, in any combination, would not result in a fibrous reinforcing structure that includes (1) at least one central layer of randomly distributed continuous strands, where the continuous strands form loops partially superposed one on top of another, (2) at least one first reinforcing fabric layer disposed exterior to the central layer of randomly distributed continuous strands, and (3) a second reinforcing fabric layer located on another side of the continuous strand layer from the first reinforcing fabric layer, where the layers of the structure are linked together by a mechanical mechanism or a chemical mechanism, where the loops of continuous strands are bound by a binder to fix the geometry of the loops, and where the binder is independent of the mechanical mechanism and/or chemical mechanism. Because claims 42-46 are dependent upon claim 27, which, as discussed in detail above, is not taught or suggested by Brock, Thomas, Gracer, and/or Cancio, Applicants submit that claims 42-46 are also not taught or suggested by Brock, Thomas, Gracer, and/or Cancio.

LLC, Eighth Ed., Rev. 7, August 2008, §2143 citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007)).

In view of the above, Applicants respectfully submit that claims 42-46 are non-obvious and patentable over Brock or Thomas in view of Gracer or Cancio and respectfully request that this rejection be reconsidered and withdrawn.

Conclusion

In light of the above, Applicants believe that this application is now in condition for allowance and therefore request favorable consideration.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

If necessary, the Commissioner is hereby authorized to charge payment or credit any overpayment to Deposit Account No. 50-0568 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

Date: March 2, 2010

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